

**CHAPTER 4
RESIDENTIAL MANDATORY MEASURES**

DIVISION 4.2 – ENERGY EFFICIENCY

**SECTION 4.201
GENERAL**

4.201.1 Scope. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

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APPENDIX A4 RESIDENTIAL VOLUNTARY MEASURES

DIVISION A4.2 – ENERGY EFFICIENCY

SECTION A4.201 GENERAL

A4.201.1 Scope. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards. It is the intent of these voluntary standards to encourage buildings to achieve exemplary performance in the area of energy efficiency.

SECTION A4.202 DEFINITIONS

A4.202.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

Energy Design Rating. The sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system. The Design Rating is calculated by Compliance Software certified by the Energy Commission.

Energy Budget. The sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building, as established in the Alternative Calculation Method Reference Manual approved by the Energy Commission and calculated by Compliance Software certified by the Energy Commission.

Time Dependent Valuation (TDV) Energy. The time varying energy caused to be used by the building to provide space conditioning and water heating and for specified buildings lighting. TDV energy accounts for the energy used at the building site and consumed in producing and in delivering energy to a site, including, but not limited to, power generation, transmission and distribution losses.

SECTION A4.203 PERFORMANCE APPROACH FOR NEWLY CONSTRUCTED BUILDINGS

A4.203.1 Energy Efficiency. Newly constructed low-rise residential buildings shall comply with Sections A4.203.1.1 and either A4.203.1.2.1 or A4.203.1.2.2.

A4.203.1.1 Prerequisites. Each of the following efficiency measures is required for all applicable components of the building project.

A4.203.1.1.1 Energy Design Rating. An energy design rating for the Proposed Design Building shall be computed by Compliance Software certified by the Commission and this rating shall be included in the Certificate of Compliance documentation.

A4.203.1.1.2 Quality Insulation Installation (QII). The QII procedures specified in the Building Energy Efficiency Standards Reference Residential Appendix RA3.5 shall be completed.

A4.203.1.1.3 Lighting. Comply with all applicable requirements of Title 24, Part 6 Section 150.0(k). In addition:

1. All permanently installed lighting shall be high efficacy. Permanently installed lighting shall be installed in kitchens, bathrooms, utility rooms, and private garages at a minimum.

Exceptions:

1. Night lights which comply with Title 24, Part 6 Section 150.0(k)1E.
2. Lighting integral to exhaust fans which comply with Title 24, Part 6 Section 150.0(k)1F.
2. All permanently installed lighting in bathrooms shall be controlled by a vacancy sensor.

Exception: One high efficacy luminaire with total lamp wattage rated to consume no greater than 26 watts of power.

3. Every room greater than 70 square feet which does not have permanently installed lighting and has receptacles installed shall have at least one switched receptacle installed.
4. For single family residential buildings, all permanently installed outdoor lighting shall have controls complying with Title 24, Part 6 Sections 150.0(k)9Ai and iii. For multi-family residential buildings, all permanently installed outdoor lighting controlled from within a dwelling unit shall have controls complying with Title 24, Part 6 Sections 150.0(k)9Ai and iii. For multi-family residential buildings, all permanently installed outdoor lighting which is not controlled from within a dwelling unit shall have controls complying with Title 24, Part 6 Section 150.0(k)9Bii.

A4.203.1.2 Performance Standard. Comply with one of the advanced efficiency levels indicated below.

A4.203.1.2.1 Tier 1: Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

A4.203.1.2.2 Tier 2: Buildings complying with the second level of advanced energy efficiency shall have an Energy Budget that is no greater than 70 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

Note: For Energy Budget calculations high-rise residential and hotel/motel buildings are considered nonresidential buildings.

SECTION A4.203

PERFORMANCE APPROACH FOR ADDITIONS AND ALTERATIONS

A4.204.1 Energy Efficiency. Additions and alterations to low-rise residential buildings shall comply with Sections A4.204.1.1 and either A4.204.1.2.1 or A4.204.1.2.2.

A4.204.1.1 Prerequisites. Each of the following efficiency measures is required if applicable to the addition or alteration building project:

A4.204.1.1.1 Lighting. Comply with all applicable requirements of Title 24, Part 6 Section 150.0(k). In addition:

1. All newly installed, permanently installed lighting shall be high efficacy.

Exceptions:

1. Night lights complying with Title 24, Part 6 Section 150.0(k)1E.
2. Lighting integral to exhaust fans complying with Title 24, Part 6 Section 150.0(k)1F.
2. All newly installed, permanently installed lighting in bathrooms shall be controlled by a vacancy sensor.

Exception: One high efficacy luminaire with total lamp wattage rated to consume no greater than 26 watts of power.

3. Every new room greater than 70 square feet which does not have newly installed, permanently installed lighting and has newly installed receptacles shall have at least one switched receptacle installed.
4. For single family residential buildings, all newly installed, permanently installed outdoor lighting shall have controls complying with Title 24, Part 6 Sections 150.0(k)9Ai and iii. For multi-family residential buildings, all newly installed, permanently installed outdoor lighting controlled from within a dwelling unit shall have controls complying with Title 24, Part 6 Sections 150.0(k)9Ai and iii. For multi-family

residential buildings, all newly installed, permanently installed outdoor lighting which is not controlled from within a dwelling unit shall have controls complying with Title 24, Part 6 Section 150.0(k)9Bii.

A4.204.1.2 Performance Standard. Comply with one of the advanced efficiency levels indicated below.

A4.204.1.2.1 Tier 1: Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on the number of mechanical systems added or modified. Space heating systems, space cooling systems and water heating systems are each separate mechanical systems for the purpose of complying with this requirement. If the addition or alteration changes only the envelope with no change to any mechanical system, then no additional performance requirements above Title 24, Part 6 are required.

1. For one and only one mechanical system: No greater than 95 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
2. For two or more mechanical systems: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

A4.204.1.2.2 Tier 2: Buildings complying with the second level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on the number of mechanical systems added or modified. Space heating systems, space cooling systems and water heating systems are each separate mechanical systems for the purpose of complying with this requirement. If the addition or alteration changes only the envelope with no change to any mechanical system, then no additional performance requirements above Title 24, Part 6 are required.

1. For one and only one mechanical system: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
2. For two or more mechanical systems: No greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

Note: For Energy Budget calculations high-rise residential and hotel/motel buildings are considered nonresidential buildings.

**APPENDIX A4
RESIDENTIAL VOLUNTARY MEASURES**

DIVISION A4.6 – TIER 1 AND TIER 2

**SECTION A4.601
GENERAL**

A4.601.4.2 Prerequisite and elective measures for Tier 1.

2. From Division A4.2, Energy Efficiency.
 - 2.1 For newly constructed low-rise residential buildings, comply with the energy efficiency requirements in Section A4.203.1.1 and Section A4.203.1.2.1.
 - 2.2 For additions and alterations to low-rise residential buildings, comply with the energy efficiency requirements in A4.204.1.1 and Section A4.204.1.2.1.

A4.601.5.2 Prerequisite and elective measures for Tier 2.

2. From Division A4.2, Energy Efficiency.
 - 2.1 For newly constructed low-rise residential buildings, comply with the energy efficiency requirements in Section A4.203.1.1 and Section A4.203.1.2.2.
 - 2.2 For additions and alterations to low-rise residential buildings, comply with the energy efficiency requirements in A4.204.1.1 and Section A4.204.1.2.2.

APPENDIX A4 RESIDENTIAL VOLUNTARY MEASURES

DIVISION A4.6 – TIER 1 AND TIER 2

SECTION A4.602 RESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST

FEATURE OR MEASURE	LEVELS APPLICANT TO SELECT ELECTIVE MEASURES			VERIFICATIONS ENFORCING AGENCY TO SPECIFY VERIFICATION METHOD		
	Mandatory	Prerequisites and electives ¹		Enforcing Agency <input type="checkbox"/> All	Installer or Designer <input type="checkbox"/> All	Third party <input type="checkbox"/> All
		Tier 1	Tier 2			
ENERGY EFFICIENCY						
General						
4.201.1 Building meets or exceeds the requirements of the California Building Energy Efficiency Standards. ²	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance Approach for Newly Constructed Buildings						
A4.203.1.1.1 An Energy Design Rating for the Proposed Design Building is included in the Certificate of Compliance documentation.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.203.1.1.2 QII procedures specified in the Building Energy Efficiency Standards Reference Residential Appendix RA3.5 are completed.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.203.1.1.3 All permanently installed lighting is high efficacy and has required controls.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.203.1.2.1 The Energy Budget is no greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.		<input checked="" type="checkbox"/> ³		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.203.1.2.2 The Energy Budget is no greater than 70 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.			<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance Approach for Additions and Alterations						
A4.204.1.1.1 All newly installed, permanently installed lighting is high efficacy and has required controls.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FEATURE OR MEASURE	LEVELS APPLICANT TO SELECT ELECTIVE MEASURES			VERIFICATIONS ENFORCING AGENCY TO SPECIFY VERIFICATION METHOD		
	Mandatory	Prerequisites and electives ¹		Enforcing Agency <input type="checkbox"/> All	Installer or Designer <input type="checkbox"/> All	Third party <input type="checkbox"/> All
		Tier 1	Tier 2			
A4.204.1.2.1 When one and only one mechanical system is added or modified, the Energy Budget is no greater than 95 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building. When two or more mechanical systems are added or modified, the Energy Budget is no greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.		<input checked="" type="checkbox"/> ³		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.204.1.2.2 When one and only one mechanical system is added or modified, the Energy Budget is no greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building. When two or more mechanical systems are added or modified, the Energy Budget is no greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.			<input checked="" type="checkbox"/> ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Measures in this table may be mandatory if adopted by a city, county, or city and county as specified in Section 101.7.
2. These measures are currently required elsewhere in statute or in regulation.
3. Required for this Tier.

APPENDIX A5 NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.2 ENERGY EFFICIENCY

SECTION A5.203 PERFORMANCE APPROACH

A5.203.1 Energy Efficiency. Nonresidential, high-rise residential and hotel/motel buildings that include lighting and/or mechanical systems shall comply with Sections A5.203.1.1 and either A5.203.1.2.1 or A5.203.1.2.2. Newly constructed buildings as well as additions and alterations are included in the scope of these sections. Buildings permitted without lighting or mechanical systems shall comply with Section A5.203.1.1 but are not required to comply with Sections A5.203.1.1.2 or A5.203.1.2.

A5.203.1.1 Prerequisites. Each of the following efficiency measures is required for all applicable components of the building project:

A5.203.1.1.1 Outdoor Lighting. Newly installed outdoor lighting power shall be no greater than 90 percent of the Title 24, Part 6 calculated value of allowed outdoor lighting power.

A5.203.1.1.2 Service Water Heating in Restaurants. Newly constructed restaurants 8,000 square feet or greater and with service water heaters rated 75,000 Btu/h or greater shall install a solar water-heating system with a minimum solar savings fraction of 0.15.

Exceptions:

1. Buildings with a natural gas service water heater with a minimum of 95 percent thermal efficiency.
2. Buildings where greater than 75 percent of the total roof area has annual solar access that is less than 70 percent. Solar access is the ratio of solar insolation including shade to the solar insolation without shade. Shading from obstructions located on the roof or any other part of the building shall not be included in the determination of annual solar access.

A5.203.1.2 Performance Standard. Comply with one of the advanced efficiency levels indicated below.

A5.203.1.2.1 Tier 1: Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on the type of energy systems included in the building project. If the newly constructed building, addition or alteration does not include indoor lighting or mechanical systems, then no additional performance requirements above Title 24, Part 6 are required.

1. For building projects that include indoor lighting or mechanical systems, but not both: No greater than 95 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
2. For building projects that include indoor lighting and mechanical systems: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

A5.203.1.2.2 Tier 2: Buildings complying with the second level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on the type of energy systems included in the building project. If the newly constructed building, addition or alteration does not include indoor lighting or mechanical systems, then no additional performance requirements above Title 24, Part 6 are required.

1. For building projects that include indoor lighting or mechanical systems, but not both: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
2. For building projects that include indoor lighting and mechanical systems: No greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.

Note: For Energy Budget calculations high-rise residential and hotel/motel buildings are considered nonresidential buildings.

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APPENDIX A5 NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.6 – VOLUNTARY TIERS

SECTION A5.601 CALGREEN TIER 1 AND TIER 2

A5.601.2.2 Energy Performance. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

A5.601.2.3 Tier 1. Comply with the energy efficiency requirements in Section A5.203.1.1 and Section A5.203.1.2.1.

A5.601.3.2 Energy Performance. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

A5.601.3.3 Tier 2. Comply with the energy efficiency requirements in Section A5.203.1.1 and Section A5.203.1.2.2.

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APPENDIX A5 NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.6 – VOLUNTARY TIERS

SECTION A5.602 NONRESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST

APPLICATION CHECKLIST FOR BSC	MANDATORY	VOLUNTARY ¹	
		CALGreen Tier 1	CALGreen Tier 2
Energy Efficiency			
Performance Requirements			
5.201.1 Scope. Building meets or exceeds the requirements of the California Building Energy Efficiency Standards. ²	<input checked="" type="checkbox"/>		
A5.203.1.1.1 Outdoor Lighting. Newly installed outdoor lighting power is no greater than 90 percent of the Title 24, Part 6 calculated value of allowed outdoor lighting power.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³
A5.203.1.1.2 Service Water Heating in Restaurants. Newly constructed restaurants 8,000 square feet or greater and with service water heaters rated 75,000 Btu/h or greater installed a solar water-heating system with a minimum solar savings fraction of 0.15 or meet one of the exceptions.		<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/> ³
A5.203.1.2.1 Tier 1. For building projects that include indoor lighting or mechanical systems, but not both, the Energy Budget is no greater than 95 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building. For building projects that include indoor lighting and mechanical systems, the Energy Budget is no greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.		<input checked="" type="checkbox"/> ³	
A5.203.1.2.2 Tier 2. For building projects that include indoor lighting or mechanical systems, but not both, the Energy Budget is no greater than 90 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building. For building projects that include indoor lighting and mechanical systems, the Energy Budget is no greater than 85 percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building.			<input checked="" type="checkbox"/> ³

1. Measures in this table may be mandatory if adopted by a city, county, or city and county as specified in Section 101.7.
2. These measures are currently required elsewhere in statute or in regulation.
3. Required for this Tier.